CLAIMS:

1. A semiconductor device provided with a circuit, a security layer that covers the circuit, a security element comprising a local area of the security layer, and a sensor, characterized in that:

- the security layer comprises embedded magnetic particles, and
- the sensor is a magnetic sensor, capable of measuring of a magnetic property of the security layer.

2. A semiconductor device as claimed in Claim 1, characterized in that the magnetic sensor is a magnetoresistive sensor, capable of converting the magnetic properties into an actual value of the impedance.

3. A semiconductor device as claimed in Claim 1, characterized in that the embedded magnetic particles are distributed inhomogeneously in the security layer (53) over the circuit.

4. A semiconductor device as claimed in Claim 1, characterized in that the magnetic particles are superparamagnetic particles embedded in microbeads.

5. A semiconductor device as claimed in Claim 1, characterized in that the magnetic particles comprise a hard-magnetic material.

6. A semiconductor device as claimed in Claim 2, characterized in that the magnetoresistive sensors having an axis of sensitivity substantially parallel to the security layer are shaped as stripes that have a length in a direction substantially perpendicular to the axis of sensitivity.

7. A semiconductor device as claimed in Claim 1, further provided with a memory for storing an initial actual value of the impedance of the security element as a reference value.

8. A carrier provided with a semiconductor device as claimed in one any of the Claims 1 to 7.

9. A card reader suitable for a carrier as claimed in Claim 8, characterized in that magnetization means are present in order to generate an external magnetic field that will induce a magnetization in the magnetic particles substantially perpendicular to the security layer.

10. A card reader as claimed in Claim 9, characterized in that a reference sensor is present for measuring the external magnetic field, so that the external magnetic field can be calibrated.

11. A card reader as claimed in Claim 9, characterized in that the magnetization means are part of a degaussing circuit.

12. A method of initializing the semiconductor device as claimed in any one of the Claims 1 to 7, comprising the steps of:

- determining an initial actual value of the impedance of the security element, and
- storing the initial actual value as the reference value in a memory in the semiconductor device or in a central database device located in or connected to the card reader as claimed in Claim 9.

13. A method of checking the authenticity of a semiconductor device as claimed in any one of the Claims 1 to 7, the device being initialized by the method of Claim 12, comprising the steps of

- determining an actual value of the impedance of the security element,
- reading the reference value from the memory,
- comparing the actual value and the reference value, and
- recognizing the authenticity of the semiconductor device only if the difference between the actual value and the reference value is below a predefined threshold value.

14. A method of initializing or checking as claimed in Claim 12 or 13, characterized in that the step of determining an actual value comprises the steps of:

- measuring an off-state value at a standard external magnetic field;
- generating an external magnetic field to induce a magnetization in the magnetic particles substantially perpendicular to the security layer;
- measuring an on-state value before the external magnetic field is switched off,
- determining the actual value of the impedance of the security element as the difference between the on-state value and the off-state value.

15. A method of initializing or checking as claimed in Claim 14, characterized in that:

- at least a proportion of the magnetic particles embedded in the security layer of the semiconductor device comprise a hardmagnetic material; and
- before measuring of the off-state value, a preliminary treatment is performed in order to remove any existing magnetization in the magnetic particles in the direction substantially perpendicular to the security layer.

16. A method of checking the authenticity as claimed in Claim 15, characterized in that the external magnetic field is generated at a strength below the saturation magnetization field strength of at least proportion of the magnetic particles.

17. A method of checking the authenticity as claimed in Claim 15, characterized in that the external magnetic field is alternating, and the magnitude of the field decreases down to an average bias field below the saturation magnetization field of at least a proportion of the magnetic particles.

18. A method as claimed in Claims 12 or 13, characterized in that at least proportion of the magnetic particles embedded in the security layer of the semiconductor device comprise a soft-magnetic material, and that the step of determining an actual value comprises the steps of:

- generating an external magnetic field to induce a magnetization in the magnetic particles substantially perpendicular to the security layer;
- measuring a first and a second value before the soft-magnetic particles are relaxed to their saturation magnetization,

- determining the actual value of the impedance of the security element as the difference between the first and the second value.